

### Abstract of the Disclosure

Hydrogen purification devices, components thereof, and fuel processors and fuel cell system containing the same. The hydrogen purification devices include an enclosure that contains a separation assembly adapted to  
5 receive a mixed gas stream containing hydrogen gas and to produce a stream that contains pure or at least substantially pure hydrogen gas therefrom. The separation assembly includes at least one hydrogen-permeable and/or hydrogen-selective membrane. The device components that are formed from materials having similar or the same coefficients of thermal expansion as the at least one  
10 membrane and/or which are formed from an alloy comprising nickel and copper. In some embodiments, these components include at least a portion of a support for the at least one membrane, and in some embodiments, these components include at least a portion of the enclosure.